



# Driving Global Economic Growth

## U.S. Manufacturing Firms Innovate to Stay Competitive

by the ITA Office of Public Affairs

The manufacturing sector in America is the foundation on which much of the rest of our economy is built. U.S.

Census Bureau statistics reflect that fact. Manufacturing generates 16 percent of gross domestic product and directly employs 18 million Americans, 14 percent of all workers.

What these statistics do not capture, however, is the extent to which manufacturing drives the rest of the economy. Much is made of the rise of the service sector over the last 20 years. It is an area of undeniable strength and competitive advantage in the U.S. economy. But we should not overlook the fact that some of the growth in the service sector has come from outsourcing functions that American manufacturers used to perform for themselves.

Internal shipping departments used to be commonplace. In the mid- to late-1980s, most major manufacturers handled all of their own shipping and customs brokerage. With that went a variety of administrative and compliance costs. Today, we see major transportation logistics firms providing these services at much lower costs. The

ability to offer such services on a scale no manufacturing firm could match has helped U.S. manufacturers and exporters to reduce their costs significantly.

The shift from in-house to outsourcing has also meant that jobs and statistics that used to show up in the manufacturing column in our national income accounts now show up under the heading of services. In the past two decades, the U.S. economy has experienced significant restructuring. The process of restructuring has strengthened our ability to compete worldwide in both manufacturing and services. The efficiencies gained through that restructuring represent hard-won results that continue to drive increases in productivity, which ultimately affects our standard of living.

The service sector is dependent on the key user of services—our manufacturing base, as well as other segments of our economy. In the absence of a strong manufacturing sector, our service businesses would suffer as well. The fact that recent slowdowns in the service sector coincided with similar slowdowns in manufacturing activity is no accident. In short, manufacturing activity drives economic growth beyond the 16 per-

cent of GDP reflected in Census Bureau statistics, which underscores the importance of understanding the competitive challenges our manufacturing sector faces in global markets.

Does the fact that our manufacturing sector faces challenges mean that this important sector of the economy is unable to compete in world markets? The World Economic Forum's 2002 *Global Competitiveness Report* answers that question directly. The report named the United States as the most competitive economy in the world. The report highlighted America's significant levels of research and development, innovative business community, strong venture capital markets, and commitment to innovation and technological advancement.

Each factor cited by the World Economic Forum's report underscores the basic strength of our manufacturing sector. Throughout our history, the manufacturing sector has seized opportunity and pursued the latest technology. In fact, manufacturing accounts for approximately two-thirds of private research and development expenditures. This has resulted in sustained technological innovations and

## Recognition for Export Performance

In August 2001, Commerce Secretary Evans presented Aranda Tooling with the U.S. Commerce Department's Export Achievement Award. The firm has utilized the services of the Commerce Department's U.S. Export Assistance Center in Newport Beach, Calif. Raul Lozano of the Newport office provided counseling and trade show information for the company's exports to Brazil, China, Japan, South Korea, Mexico, and the United Kingdom.

"Small companies like Aranda are willing to take a risk and smart enough to know that the global economy is the place you want to be to make money," Evans said. Evans noted Aranda Tooling's great success in exporting and the contributions of the firm in creating jobs. "You truly represent the backbone of our nation's economy," he told Pedro Aranda and his 125 employees at the presentation.

Exports account for 50 percent of Aranda Tooling's sales, and the firm is looking to use more of the services of the U.S. Export Assistance Center in Newport Beach. "There is a strong possibility that we will soon be arranging to use the Commerce Department's Gold Key Service in Mexico, which provides for pre-arranged business appointments," says Aranda. "Mexico will likely continue to be our largest market, especially with all the automotive assembly that goes on there."

Where else might Pedro Aranda be looking to expand his firm's sales?

"There's plenty of export opportunities out there," he says. "The biggest challenge is finding the customers."



**"Manufacturers now and in the future don't need a specialized work force—we need a work force capable of doing a variety of tasks. It's a lot like the tradesmen and artisans of a long time ago."**

—James G. Kriebel, BAE Systems, Nashua, N.H.  
*New Hampshire Business Review*, June 19, 2003

tremendous productivity gains, which in turn have fueled higher wages, living standards, and economic growth.

That record of innovation, both in products and manufacturing processes, and in business and financial management, has yielded continuing gains in productivity. With rising productivity, the business pages of our newspapers

generally focus on jobs lost and take that as a weakness in American manufacturing. What that reporting overlooks is that productivity gains are the most fundamental indicator of national economic health.

The recession in manufacturing began at least 18 months before the recession overtook the economy as a whole. The



sharp decline in economic growth in Asia following the 1997–1998 financial crisis translated into a sharp fall in demand for the capital goods that represent areas of U.S. manufacturing excellence. The 40 percent appreciation of the U.S. dollar from 1997 to 2001 reflected the underlying strength of the U.S. economy, but it also put American manufacturers under increasing pressure both in the competitiveness of their exports and the competition they faced here at home. Indeed, the fact that Europe and Japan trailed the United States into the recession and still have yet to recover (e.g., European economic growth in 2002, without the contribution of a growing British economy, was 0.3 percent) has meant a stiff challenge for American manufacturers that relied on those markets for a share of their own growth.

In light of these issues and challenges, the U.S. Department of Commerce has launched a series of roundtables to hear directly from manufacturers about the steps we can take in order to stay competitive (see sidebar).

#### INDUSTRY FEEDBACK

Industry associations, including the National Association of Manufacturers (NAM) and the Manufacturers Alliance/MAPI, have identified common issues with which most manufacturers are dealing. These include:

##### ■ **Lagging investment and R&D:**

U.S. manufacturing's share of total U.S. capital investment expenditures has declined since 1999. In addition, R&D spending by manufacturers in 2000–2002 grew at only half the pace of the previous decade.

##### ■ **Exports below potential:**

Goods exports have declined \$86 billion over the past two years. They now account for only 6 percent of GDP, compared with 8 percent in 1997. The overvalued dollar, the Asian currency crisis, and the post-September 11 economic slowdown were key factors—but so also was increased import

## NATIONWIDE MANUFACTURING MEETINGS



Donald L. Evans  
34th U.S. Secretary of Commerce

In March of this year, Commerce Secretary Donald L. Evans outlined an aggressive agenda to cement the role of manufacturing as a driving force in increasing productivity, creating economic growth, and creating jobs.

As a part of that agenda, Under Secretary of Commerce for International Trade Grant Aldonas and other Commerce officials are taking a comprehensive look at the challenges and opportunities American manufacturers face by meeting with manufacturers around the nation.

“President Bush has made economic growth and job creation a top priority of this administration, and he understands that you can’t address those two priorities without taking a serious look at manufacturing,” said Evans. “Manufacturers have always reflected the best of American business, showing resiliency and high productivity. This administration will do all it can to ensure that manufacturers can compete and win in the global economy.”

Officials from the U.S. Commerce Department have visited more than a dozen cities across the country, discussing sectors ranging from telecommunications to tooling.

Under Secretary Aldonas will review the findings of all of the discussions and present a report to Secretary Evans with recommendations early this fall.

For more information, visit [www.export.gov/manufacturing](http://www.export.gov/manufacturing).

## Lubricating Exports

Petrochem of Lockport, Ill., manufactures synthetic oven chain lubricants. Its president, Carol Sluski, developed a unique oven chain lubricant, called HT-2000, for use in bakeries. Ms. Sluski credits the U.S. Commerce Department's Global Diversity Export Training program in Chicago for assisting her in expanding internationally. The program is designed to prepare women- and minority-owned firms to sell their products and services internationally.

Lora Baker, regional coordinator of the Commerce Department's Global Diversity Initiative, provided export counseling to Ms. Sluski, encouraged her to enroll in the export-training program, and to participate in a Department of Commerce trade mission to Guadalajara. One of the companies that Petrochem met with at this event is now the exclusive distributor of Petrochem's products in Latin America and Spain. Ms. Sluski also followed Ms. Baker's advice to obtain an export credit insurance policy from the Ex-Im Bank.

Petrochem now exports its oven chain lubricants to Mexico, Britain, South Africa, Spain, Argentina, Israel, Australia, New Zealand, Germany, and Saudi Arabia.

competition. Stagnating exports and rapidly rising imports, particularly from China, have raised the merchandise trade deficit to record levels (more than \$480 billion in 2002).

■ **Large cost increases and declining prices:** The cost of manufacturing in the United States has risen sharply as

a result of increased costs of health care, litigation, and regulatory compliance. While overall U.S. prices have risen 18 percent since 1994, the overall price level for manufactured goods has declined 6 percent. Faced with increasing costs and an inability to raise prices, many manufacturers find they have no choice but to move

---

**“We aren’t afraid of competition, but we have to know what we are competing against. We want a level playing field.”**

—Brad Beal, Jockey International Inc., Kenosha, Wis.  
*The Business Journal*, May 30, 2003

---



abroad if they are to remain competitive in the global economy.

■ **Skilled labor shortages:** As manufacturing workers retire or move to other occupations, the pool of skilled labor is not being replenished. A recent NAM survey found that 80 percent of manufacturers faced a shortage of qualified job applicants even as they reduced their work forces. In another survey, one out of eight employers said that job applicants needed training in basic reading, writing, and math skills. According to a study conducted by MAPI of high school students in the Midwest, only 1 percent of high school students would like to work in manufacturing, which tied with religion for last place among 18 possible career choices.

### GAINS IN PRODUCTIVITY

Despite the challenges that manufacturers are tackling, there are a few optimistic observations, which are identified in a larger study conducted by the Manufacturers Alliance. In the last 12 years, manufacturing has actually grown faster than the overall economy. Manufacturing grew by an average of 3.3 percent in this period, or almost 10 percent faster than the 3.1 percent growth rate for the overall economy, according to data collected by the Bureau of Economic Analysis. The value-added and technology content of U.S. manufacturing remains superior to most other countries.

Since the 1990s, there has been a recovery of productivity growth, led predominantly by manufacturing, and the lower unit labor costs associated with this productivity boom allow U.S. manufacturers to compete effectively in global markets. Much of the gain in productivity is derived from investments and innovation in technology. New productivity-enhancing technology developed largely in the manufacturing sector is the source of many of the efficiency improvements in other sectors of the economy.



### DISCUSSIONS

During the roundtables with various industry sectors, hosted by Bush administration officials, several themes emerged that are of particular concern to all sectors, not only manufacturing.

#### Protecting Intellectual Property

Public policy aimed at protection of intellectual property is based on the desire to ensure a rich, diverse, and competitive marketplace. Giving inventors, scientists, writers, artists, businesspeople, and others enforceable property rights in their creative work makes it possible for creators to recoup their investments in the creative process, encouraging them to devote their time and efforts to developing new works, products, and services. Creators' home countries also benefit when intellectual property rights are protected by law. For example:

- Copyright laws encourage creation of literary works, computer programs, artistic works, and expressions of national culture.
- Patent laws encourage discovery and invention of new and improved products, processes and other contributions to society, while ensuring public access to information regarding these new products and processes.

- Trademark laws encourage development and maintenance of high-quality products and services that engender customer loyalty.

Because thieves, pirates, and counterfeiters neither respect national borders nor pay taxes, effective enforcement of intellectual property rights is crucial.

#### Enforcing Trade Agreements

Manufacturing is no longer a purely domestic endeavor. As with all international commerce, access to export markets is essential to ensuring smooth business cycles. The United States has negotiated and enacted more than 300 trade agreements, ranging from civil aircraft to telecommunications services. American companies reap the benefits of these agreements only when they are actively enforced. The Market Access and Compliance division within the International Trade Administration monitors and enforces trade agreements so that U.S. firms receive the full benefits of an expanded marketplace and lower costs of doing business. U.S. companies can report trade barriers to the Trade Compliance Center via [www.export.gov/tcc](http://www.export.gov/tcc).

The United States recently concluded free trade agreements with Singapore and Chile. Other agreements in the pipeline include Australia, Central

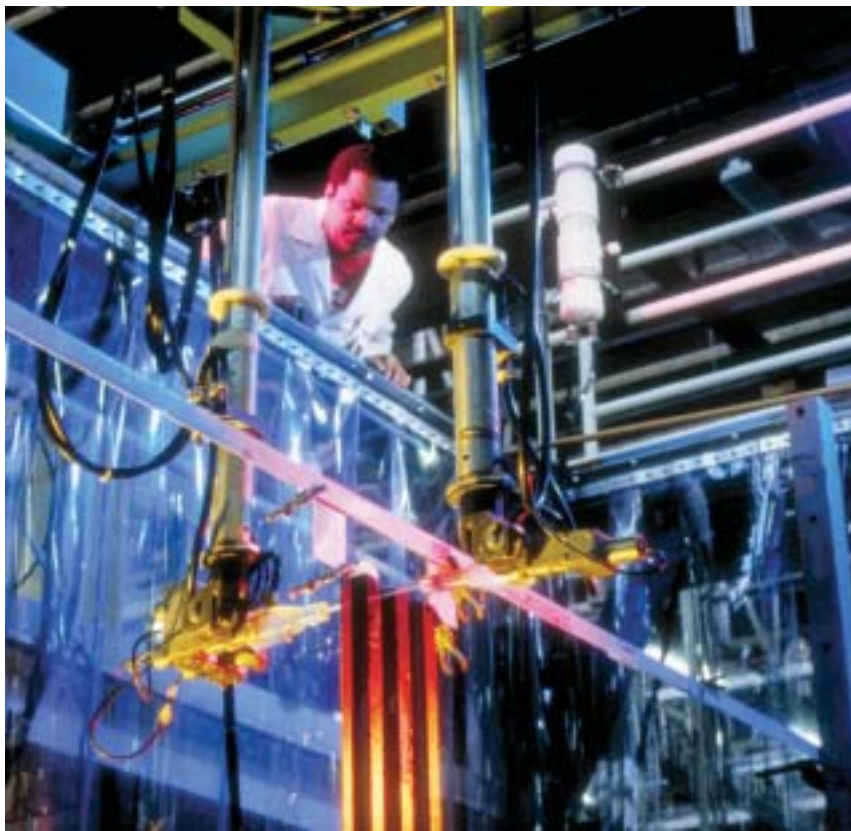


## Have Microbes, Will Travel

Dan Kelley is CEO of Tierra Dynamic Company, a Phoenix-based environmental firm specializing in removing toxins from soil and water. He and his 30 employees focused on emerging markets a few years ago. With the help of the U.S. Commercial Service and some very special bugs, they have seen their international business go from nothing to 25 percent of annual revenues.

Kelley says the move into international markets was a matter of common sense. "The environmental industry is new to many developing countries, and we can compete better over there than we can in more developed countries," he says. Kelley explains that competitors with similar technologies tend to be bigger firms for which a \$300,000 contract isn't worth the effort. "There's a big void in the market, and we're happy to fill it."

Tierra Dynamic negotiated the rights to the patent for a technology called biosparging. Simply put, Kelley's firm cultivates bacteria that occur naturally, and a special process induces them to eat spilled hydrocarbons and other bad stuff at an accelerated rate. These are not anorexic bugs. "We increased their appetite," he says. And what an appetite. According to Kelley, this technique remediates soil three times faster than other methods now on the market, a significant advantage when you're concerned about carcinogens that can cause cancers and other health problems. Tierra Dynamic has negotiated the rights to another patented technology that destroys PCBs—a particularly lethal source of carcinogens. "When you see whole families, including very young children living near this stuff, you're glad you can help protect their health," says Kelley.



**"One way of dealing with overseas competition is to streamline operations and make them as efficient as possible."**

—Mark Buck, Hypertherm, Inc., Hanover, N.H.  
*New Hampshire Business Review*, June 19, 2003

America, and the countries that comprise the Southern African Customs Union.

### RESOURCES AND ASSISTANCE

#### Manufacturing Extension Partnership

[www.mep.nist.gov](http://www.mep.nist.gov)

The Manufacturing Extension Partnership (MEP) is a network of not-for-profit centers in more than 400 locations nationwide, whose sole purpose is to provide small and medium-sized manufacturers with the help they need to succeed. The centers, serving all 50 states and Puerto Rico, are linked

through the Commerce Department's National Institute of Standards and Technology (NIST). Centers are funded by federal, state, local, and private resources to serve manufacturers. That makes it possible for even the smallest firms to tap into the expertise of manufacturing and business specialists all over the United States. These specialists are people who have had experience on manufacturing floors and in plant operations.

Each center works directly with local manufacturers to provide services tailored to their most critical needs, which range from process improvements and

worker training to business practices and applications of information technology. Solutions are offered through a combination of direct assistance from center staff and outside consultants. Centers often help small firms overcome barriers in locating and obtaining private-sector resources. Since the beginning of MEP, more than 149,000 firms have received help.

### Results

Evaluation is a key element of all MEP programs and activities. Results are used to assess the effectiveness of services and their impact on the performance of client firms, and to help guide planning at both the center and network levels. By measuring short- and long-term impacts, MEP can assess economic returns on the federal investment in manufacturing extension services. Small manufacturers that work with MEP centers exhibit dramatic improvements. For example, in a survey of MEP clients served from October 2000 through September 2001, 4,800 companies around the country reported that, as a result of MEP services, they:

- Created or retained 25,000 jobs;
- Increased or retained \$2.2 billion in sales;
- Realized \$442 million in cost savings; and
- Invested \$681 million in modernization, including plant and equipment, information systems, and work force training.

### Small Business Innovation Development

[www.sba.gov/sbir](http://www.sba.gov/sbir)

The Small Business Innovation Research and Small Business Technology Transfer programs provide an opportunity for small, high-technology companies and research institutions to participate in government-sponsored research and development in key technology areas. If you run a small business with 500 or fewer employees, or a non-profit research institution, such as a university or a research laboratory with ties to small business, then you will want to learn more about these programs and

sources of seed funding for the development of your innovations.

The Office of Technology within the U.S. Small Business Administration strengthens and expands the competitiveness of small high-technology research and development businesses in the federal marketplace. The Office of Technology promotes high-technology programs of small businesses, with particular emphasis on emerging firms. It encourages state-of-the-market technology training, technology information exchange, and outreach on federal technology programs. It also encourages private and public resource support for the commercialization of federal R&D efforts. It promotes outreach activities to introduce women- and minority-owned small businesses to the advantages of competing for federal R&D projects.

### GLOBAL FUTURE OF MANUFACTURING

Manufacturing in the United States continues to be the foundation of the economy. Global competition will continue to increase, requiring the best companies to evolve constantly to meet new situations and challenges. The pace of change will continue to be rapid, however, U.S. companies are well positioned and flexible enough to be successful in this environment. Those that are open to change, embrace new technologies and management techniques, and seek out global markets should be successful in a global economy that will grow rapidly over the next 10 years. ■

